Jameco SKU Number: 2106116

MEAN WELL

Power Control and Monitor System

RCP-MU



■ Features :

- 1U low profile
- 19-inch rack mounting
- Control and monitor up to 3 RCP-1000 units
- Suitable for all kinds of RCP output (12V,24V,48V)
- Digital meters for output voltage, output current, and internal temperature on front panel
- Potential meter for adjusting output voltage of RCP-1000 unit on front panel
- Relay contacts and LED indicators for AC fail, DC fail, and over temperature warning
- Removable fixing accessory
- 3 years warranty

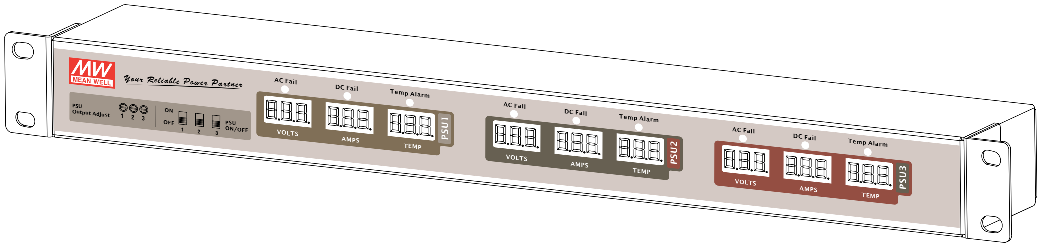
■ Description : RCP-MU is the monitoring and control unit used for the RCP-1000 series rack power. It can decode the I^2C signal sent by RCP series and display through digital meters or relay contact signals. RCP-MU can also turn ON/OFF or trim the output voltage of RCP-1000 remotely that make the basic control more easily.

SPECIFICATION

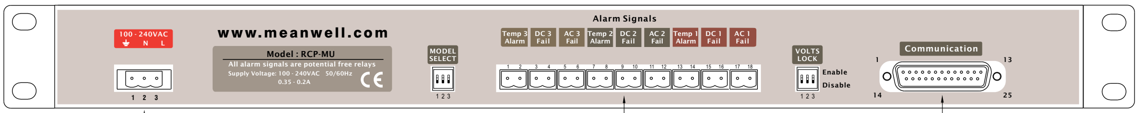
MODEL		RCP-MU
INPUT	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz
	AC CURRENT (Typ.)	0.35A/115VAC 0.2A/230VAC
	INRUSH CURRENT (Typ.)	30A/115VAC 50A/230VAC
	MONITORING INPUTS	I^2C signal (AC OK, DC OK, and over temperature alarm signals for each RCP-1000 unit), output voltage of the RCP-1U rack
OUTPUT	DIGITAL METER Note.2	Display the DC output voltage, current, and internal temperature of each RCP-1000 unit
	CONTROL OUTPUT	Remote ON/OFF and output voltage trimming for each RCP-1000 unit
	RELAY CONTACT	Alarm for AC Fail, DC Fail, and Over Temperature ; rating : 30VDC, 1A
	LED INDICATOR	AC Fail, DC Fail, Over Temperature
FUNCTION	REMOTE ON/OFF CONTROL	The controlled RCP-1000 unit can be turned ON/OFF on the front panel for RCP-MU
	VOLTAGE TRIM	Output voltage of the controlled RCP-1000 unit and be trimmed by ±10% on the front panel of RCP-MU
ENVIRONMENT	WORKING TEMP.	-20 ~ +60℃
	WORKING HUMIDITY	20~90% RH non-condensing
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes
SAFETY & EMC	SAFETY STANDARDS	Design refer to UL60950-1, TUV EN60950-1
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃/ 70% RH
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11
OTHERS	DIMENSION	440*68*44mm (L*W*H)
	PACKING	1.15Kg; 6pcs/8Kg/1.27CUFT
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Resolution and tolerance of the values shown on the digital meter depends on the controlled RCP series.	

Mechanical Specification

Case No. 701A Unit:mm



BACK



AC Input Terminal Block

Pin No.	Assignment
1	FG ⏚
2	AC/N
3	AC/L

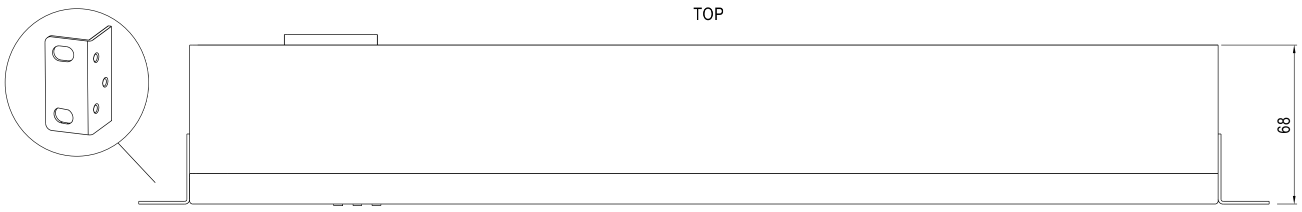
Alarm Signals Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment
1,2	Temp 3 Fail	7,8	Temp 2 Fail	13,14	Temp 1 Fail
3,4	DC 3 Fail	9,10	DC 2 Fail	15,16	DC 1 Fail
5,6	AC 3 Fail	11,12	AC 2 Fail	17,18	AC 1 Fail

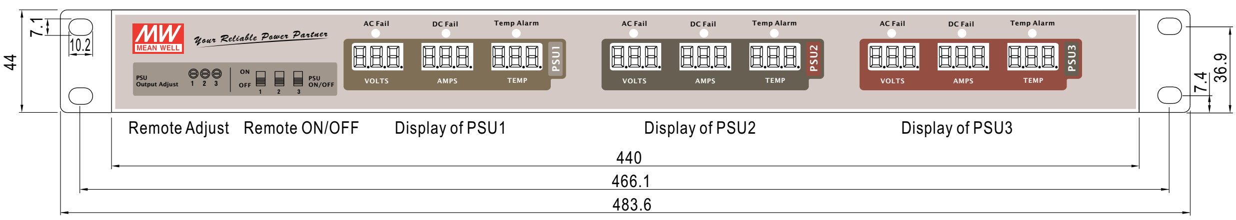
Communication Connector Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment
1	ON/OFF-A	6	+5V-AUX	11	V-TRIM-B	16	AC-OK-C	21	-S
2	AC-OK-A	7	GND-AUX	12	T-ALARM-B	17	DC-OK-C	22	+V
3	DC-OK-A	8	ON/OFF-B	13	NC	18	V-TRIM-C	23	SCL
4	V-TRIM-A	9	AC-OK-B	14	CS	19	T-ALARM-C	24	SDA
5	T-ALARM-A	10	DC-OK-B	15	ON/OFF-C	20	+S	25	-V

TOP

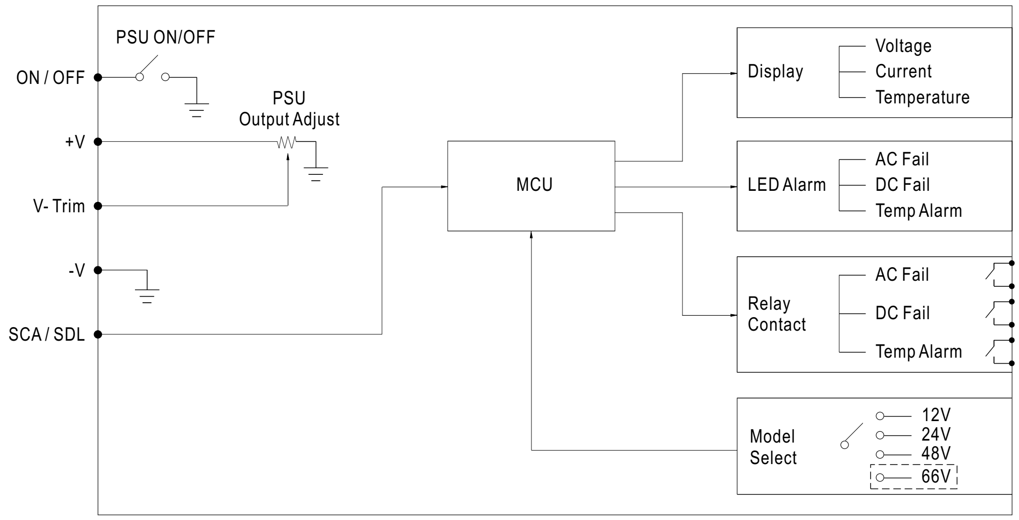


FRONT



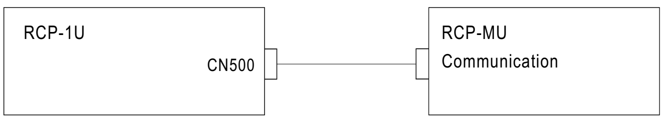
Block Diagram

The diagram below only shows one set of input / output signals. One RCP-MU can control and monitor up to 3 units of RCP-1000 power unit.

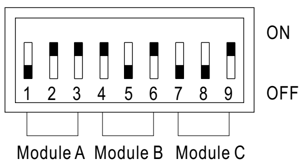


Typical User Manual

1. Monitoring Input



RCP-1U Address dip switch setting

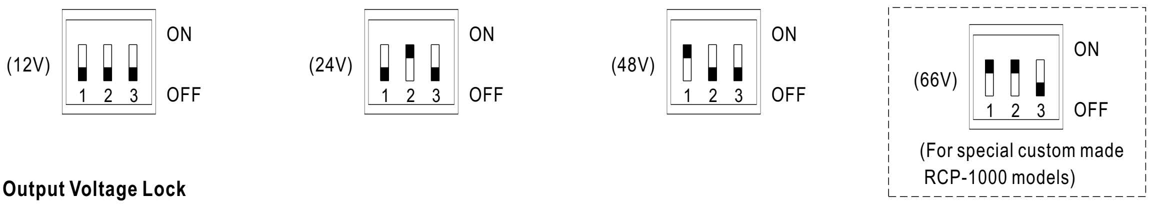


2. Alarm Signal Relay Contact

Function	Description
AC Fail	When input AC fail, relay open, LED lights
DC Fail	When output DC fail, relay open, LED lights
Temp Alarm	When temperature exceed the limit of temperature, relay open, LED lights

3. Model Select Switch

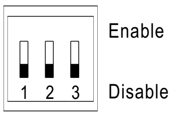
To get better display resolution, the correct output voltage of RCP-1000 that is monitored should be chosen. The factory original setting is for 48V models.



4. Output Voltage Lock

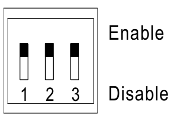
The output voltage adjustment for RCP-1000 units can be enabled or disabled for different application needs.

(a)



Voltage of power device can not be adjusted.

(b)



Voltage of power device can be adjusted independently by VRs.

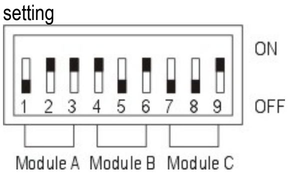
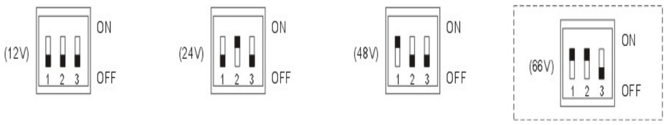
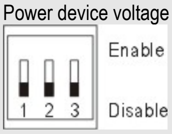
INPUT FUNCTION TEST

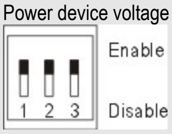
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:RCP-1000 UNIT Ta:25℃	25 V~264V	P
			I/P: LOW-LINE-3V= 87 V HIGH-LINE+15%=300 V O/P: RCP-1000 UNIT ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90VAC ~ 264 VAC O/P: RCP-1000 UNIT Ta:25℃	TEST: OK	P
5	INPUT CURRENT	230V/ 0.2 A (TYP) 115V/ 0.35 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P: RCP-1000 UNIT Ta:25℃	I = 0.04 A/ 230 VAC I = 0.048 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 50 A (TYP) 115V/ 30 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P: RCP-1000 UNIT Ta:25℃	I = 30 A/ 230 VAC I = 15 A/ 115 VAC	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	The controlled RCP-1000 unit can be turned ON/OFF on the front panel for RCP-MU	I/P: 230 VAC O/P: RCP-1000 UNIT Ta:25℃	OK	p
2	VOLTAGE TRIM	Output voltage of the controlled RCP-1000 unit and be trimmed by 10% on the front panel of RCP-MU	I/P: 230 VAC O/P: RCP-1000 UNIT Ta:25℃	12V=10.1 V~13.6 V 24V=18.5 V~26.7 V 48V=38.3 V~53.6 V 66V=53.6 V~73.3 V	p

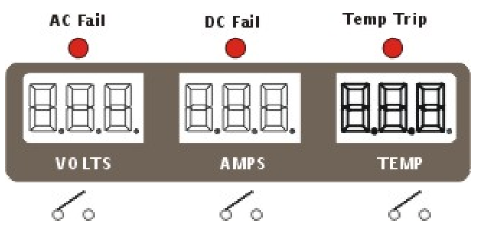
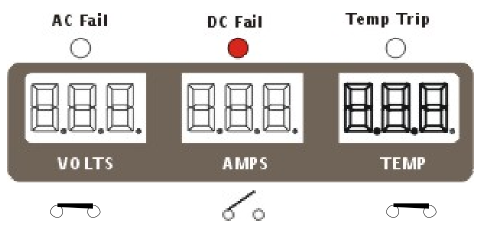
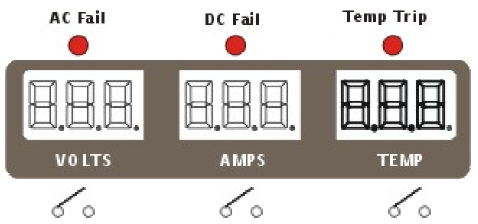
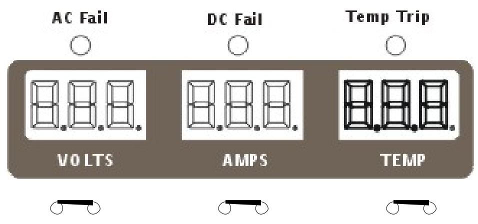
TYPICAL USER MANUAL

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>Monitoring Input</td><td>RCP-1U Address dip switch setting

</td><td>I/P: 230 VAC
O/P: RCP-1000 UNIT
Ta:25℃</td><td>OK</td><td>P</td></tr>
<tr><td>2</td><td>Alarm Signal Relays Contact</td><td>Function: Description
AC Fail: When input AC fail, relay open, LED lights
DC Fail: When output DC fail, relay open, LED lights
Temp Trip: When temperature exceed the limit of temperature, relay open, LED lights</td><td>I/P: 230 VAC
O/P: RCP-1000 UNIT
Ta:25℃</td><td>OK</td><td>P</td></tr>
<tr><td>3</td><td>Mode Select Switch</td><td>To get better display resolution, the correct output voltage of RCP-1000 that is monitored should be chosen. The factory original setting is for 48V models.

</td><td>I/P: 230 VAC
O/P: RCP-1000 UNIT
Ta:25℃</td><td>OK</td><td>P</td></tr>
<tr><td>4</td><td>Voltage Adjust</td><td>Power device voltage can not be adjusted.


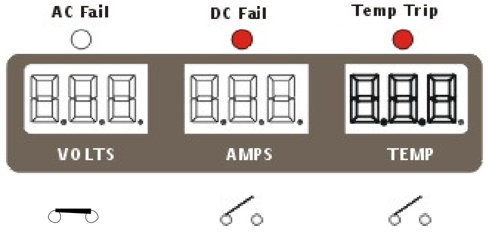
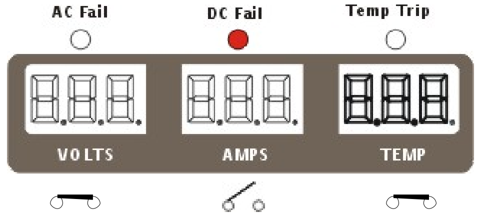
Power device voltage can be adjust independently by VRs.

</td><td>I/P: 230 VAC
O/P: RCP-1000 UNIT
Ta:25℃</td><td>OK</td><td>P</td></tr>
</table>

7 Segment Display - LED / Relay TEST：

Normal condition ：

TEST CONDITION	PSU AC IN OFF	PSU AC IN ON	RESULT
PSU SWITCH OFF			Ok
PSU SWITCH ON			Ok

Abnormal condition

TEST CONDITION	OTP	Output Shorting	RESULT
PSU SWITCH ON & PSU AC IN ON			ok

Note：○ LED DARK：OK　　　　(relay short symbol)：Relay short

● LED LIGHTS : FAIL　　　　(relay open symbol)：Relay open

DIGITAL METER TEST：

TEST CONDITION：INPUT VOLTAGE:230VAC

POWER UNIT	Module	TEST CONDITION	output voltage on the display	DMM voltage measurement	output current on the display	DMM current measurement	internal temperature on the display	Digital thermometer measurement	VERDICT
RCP-1000-12	A	NO LOAD	12.1V	12.07V	0A	0A	35.5°C	35.7°C	OK
		50% LOAD	12.3V	12.06V	29.8A	30.7A	35.5°C	35.8°C	OK
		100% LOAD	12.5V	12.05V	60.1A	61.6A	34.8°C	35.3°C	OK
	B	NO LOAD	12.1V	12.07V	0A	0A	31°C	30.9°C	OK
		50% LOAD	12.4V	12.06V	29.8A	30.6A	30.6°C	30.7°C	OK
		100% LOAD	12.5V	12.05V	60.1A	61.5A	29.9°C	29.8°C	OK
	C	NO LOAD	12.1V	12.07V	0A	0A	28.7°C	28.7°C	OK
		50% LOAD	12.4V	12.06V	29.8A	30.6A	29.1°C	29.4°C	OK
		100% LOAD	12.5V	12.05V	60.1A	61.4A	31.4°C	30.3°C	OK
RCP-1000-24	A	NO LOAD	23.9V	24.11V	0A	0A	35.9°C	35.3°C	OK
		50% LOAD	24.2V	24.11V	19.8A	20.3A	36.3°C	35.5°C	OK
		100% LOAD	24.2V	24.1V	40.5A	40.9A	36.7°C	35.8°C	OK
	B	NO LOAD	23.9V	24.11V	0A	0A	27.6°C	27.7°C	OK
		50% LOAD	24.1V	24.11V	19.6A	20.3A	28°C	28.1°C	OK
		100% LOAD	24.2V	24.11V	40.5A	40.7A	30.6°C	30.7°C	OK
	C	NO LOAD	23.9V	24.12V	0A	0A	32.5°C	31.7°C	OK
		50% LOAD	24.2V	24.11V	19.8A	20.2A	32.1°C	31.4°C	OK
		100% LOAD	24.2V	24.11V	40.5A	40.7A	31.4°C	30.3°C	OK
RCP-1000-48	A	NO LOAD	47.8V	48.2V	0A	0A	34.8°C	34.9°C	OK
		50% LOAD	48.1V	48.19V	10.3A	10.7A	34.8°C	34.9°C	OK
		100% LOAD	47.8V-48.3V	48.18V	20.8A	21.6A	34.8°C	34.8°C	OK
	B	NO LOAD	48.1V	48.13V	0A	0A	31.8°C	32.9°C	OK
		50% LOAD	48.3V	48.13V	10.2A	10.7A	32.1°C	32.6°C	OK
		100% LOAD	48.3V-48.6V	48.12V	20.7A	21.6A	32.1°C	32.7°C	OK
	C	NO LOAD	47.8V	48.13V	0A	0A	31.4°C	32.4°C	OK
		50% LOAD	48.1V	48.13V	10.3A	10.8A	31.4°C	32.3°C	OK
		100% LOAD	47.8V-48.3V	48.12V	20.6A	21.6A	30.2°C	31.8°C	OK
RCP-1000-66	A	NO LOAD	65.6V	66.14V	0A	0A	31.4°C	31.9°C	OK
		50% LOAD	65.6V	66.14V	7.8A	7.5A	30.1°C	31.5°C	OK
		100% LOAD	65.6V-65.9V	66.14V	15.2A	15.3A	30.2°C	30.6°C	OK
	B	NO LOAD	65.6V	66.16V	0A	0A	29.9°C	29°C	OK
		50% LOAD	65.6V	66.16V	7.8A	7.5A	30.2°C	29.4°C	OK
		100% LOAD	65.6V-65.9V	66.15V	15.2A	15.3A	31.8°C	30.9°C	OK
	C	NO LOAD	65.6V	66.17V	0A	0A	33.3°C	33.3°C	OK
		50% LOAD	65.6V	66.16V	7.8A	7.6A	32.9°C	32.5°C	OK
		100% LOAD	65.6V-65.9V	66.15V	15.2A	15.4A	33.3°C	33°C	OK

NOTE: output voltage/ current /internal temperature on the display. For tolerance range, please refer to specification of RCP-1000.

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL：RCP-MU 1. HIGH AMBIENT BURN-IN：2.5 HRS I/P: 230VAC O/P: RCP-1000-48*3PCS Ta= 61 ℃			P
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: RCP-1000-48*3PCS Ta= -20 ℃	TEST：OK	P
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 ℃ NO DAMAGE	I/P: 272 VAC O/P: RCP-1000-48*3PCS Ta= 60 ℃ HUMIDITY= 95 %R.H	TEST：OK	P
4	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25℃		TEST：OK	P

Temperature rise test results (item 1):

NO	Position	P/N	HIGH AMBIENT Ta= 61 ℃
1	U101	HEF4511B	60.3℃
2	U7	74HC573D	62.0℃
3	U5	PIC18F4321-I/PT	63.7℃
4	U6	74HC573D	59.8℃
5	U4	74HC573D	58.4℃
6	U3	74HC573D	58.9℃
7	Q2	TIP122 5A/100V	67.8℃
8	C7	100u/25V UL10Kh YXM	65.0℃
9	LF1	LF501	60.9℃
10	T1 COIL	TF-1394	72.4℃
11	U1	FSDM0265RNB	76.6℃
12	C105	220U/35V 105℃ KY	67.0℃
13	RY3	RELAY OUAZ-SS-112L	72.4℃
14	RY4	RELAY OUAZ-SS-112L	71.5℃
15	RY5	RELAY OUAZ-SS-112L	69.3℃

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 1.26 mA I/P-FG: 0.85 mA O/P-FG: 3.41 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃/70%RH	I/P-O/P: 1.5 GΩ I/P-FG: 1.1 GΩ O/P-FG: 7.4 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃ / 70%RH	18 mΩ	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test by certified Lab ＆ Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P: RCP-1000-48*3PCS Ta= 25 ℃ LIFE TIME= 1182279 HRS I/P: 230VAC O/P: RCP-1000-48*3PCS Ta= 60 ℃ LIFE TIME= 104510 HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q2 Rated TIP122 : 100V 5A	I/P:High-Line +3V = 267 V O/P: (1) RCP-1000 UNIT Ta:25℃	(1) 7.7 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/4/18	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2008/7/15	PRODUCT SAMPLE W0806A33	PASS	SANFORD SU	VINCENT TSENG
2008/8/15	PRODUCT SAMPLE W0807D48	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023